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The Future of Macroeconomics

A Discussion of a paper by John Muellbauer

Prepared for the ECB Colloquium in Honour of Vítor Constâncio

By

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University of Warwick, NIESR and UCLA: Wednesday 16th May 2018

I'd like to echo John's thoughts about Vítor and to thank Vítor for including me in this conference. Like John I've had many discussions with Vítor in which I would turn up in his office at 4 o'clock for a 15-minute discussion and after an hour and a half we'd still be talking about economics. If I'd known that we could also have had a discussion about music I'm sure we would still be there now.

Let me start out by saying that, in a 10-minute discussion it's difficult to do justice to everything that's in John's very interesting paper. I'm going to draw on what I take to be three themes. The first theme, that John did not say a huge amount about, is that clearly some of the DSGE models we've been working with have not been particularly successful.

Secondly, John mentioned a couple of people that he's found very insightful. One is David Hendry and one is Joe Stiglitz and I echo that sentiment. In my first job at the University of Toronto I went to see Joe Stiglitz give a talk. At the time, I didn't really have a clear thesis topic. My thesis ended up being inspired by that talk; so the notion that there are some very important insights in what we call the information revolution in economics is one that I endorse wholeheartedly.

Finally, one of the things I'd like to talk about in this discussion is what we can learn from the information revolution. My view is that what we can learn is perhaps even a little more radical than some of the things that John drew attention to.

John provided some insights from his own empirical work and I'm going to complement those insights. I will agree with some of them and provide what I believe are some important ideas, particularly for policymaking, when we think about the relationship between inflation and unemployment. There are a few themes that I'll talk about. The first one, that I've alluded to already, is exactly how should we think about introducing information theory into macroeconomics.

I believe that there are two ways in which information theory is important. One is connected with the asset markets and the other is connected with the labour market. My view is that the lessons we should be taking away from information theory go a great deal beyond the idea that shocks become amplified. In my own work, I've gone back to take what I consider to be an important idea that was in Keynes's General Theory and which became forgotten: Market economies are not self-correcting. We may get stuck with unemployment rates which could be 20% for decades or 5% for decades. The way we ought to think about that in the language of modern general equilibrium theory is that there are not just multiple equilibria; there is, potentially, a continuum of equilibria.

If you run with that idea it leads you to think about the progress we've made in the empirics of Phillips curves. I'm going to make the argument that there's a really important question that follows from the fact that there is a huge amount of persistence in the unemployment rate. In fact, I'll show you evidence which suggests that it's difficult to distinguish innovations to the unemployment rate in the U.S. from a random walk. The

question then becomes, is persistence of the unemployment rate caused by supply-side factors or is it caused by demand-side factors? According to the supply side view, the *natural rate* of unemployment is moving around. According to the demand-side view, the actual unemployment rate is moving around in a set of possible multiple equilibria and the natural rate of unemployment, as usually defined, is a meaningless concept. If this second view is correct, there is the potential for monetary policy not just to get us back to the natural rate of unemployment more quickly but to permanently influence the steady state unemployment rate.

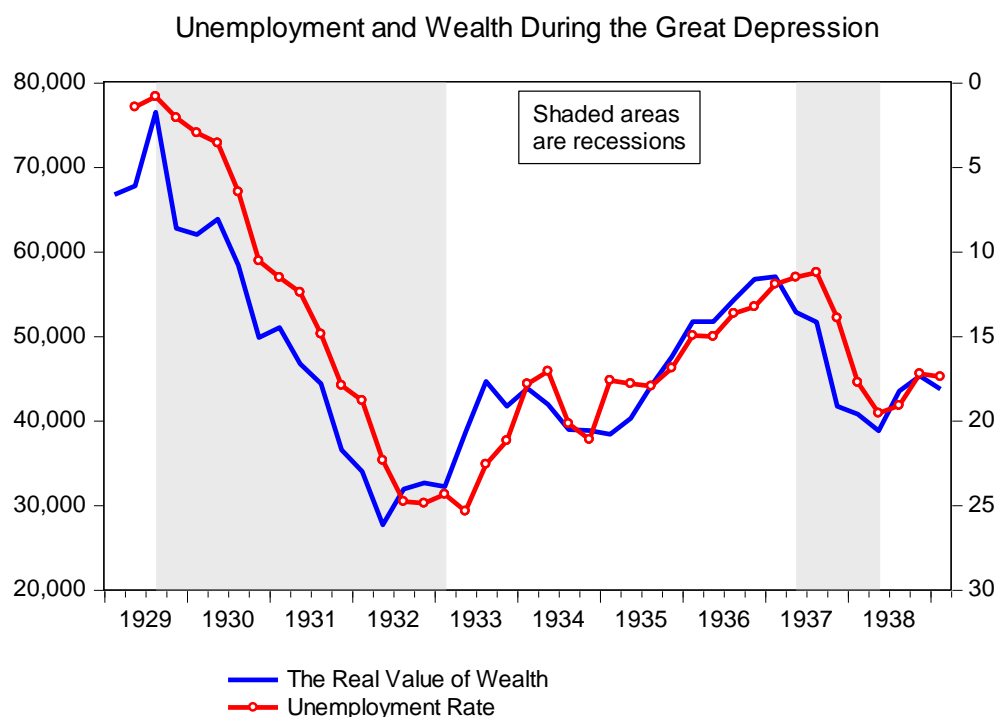


Chart 1: Unemployment and Wealth During the Great Depression¹

I'm going to show you some evidence here from my own work on the connection between financial markets and labour markets. In Chart 1, the solid line is a measure of the real value of stock market wealth in the 1920s in the United States. The line marked with circles is the unemployment rate. This is measured on the right axis on an inverted scale that varies between 0 percent and 30 percent. Notice that movements in the asset markets precede movements in the unemployment rate. This chart is suggestive that there is a causal connection that runs from asset prices to the labour market.

Now let's examine some more recent data. Chart 2 shows what happened in the Great Recession. This picture is similar to Chart 1 although the magnitudes are not as great. The right scale runs from 4 percent to 12 percent rather than from 0 to 30 percent. However, the notion

¹ Source: FRED II and author's calculations.

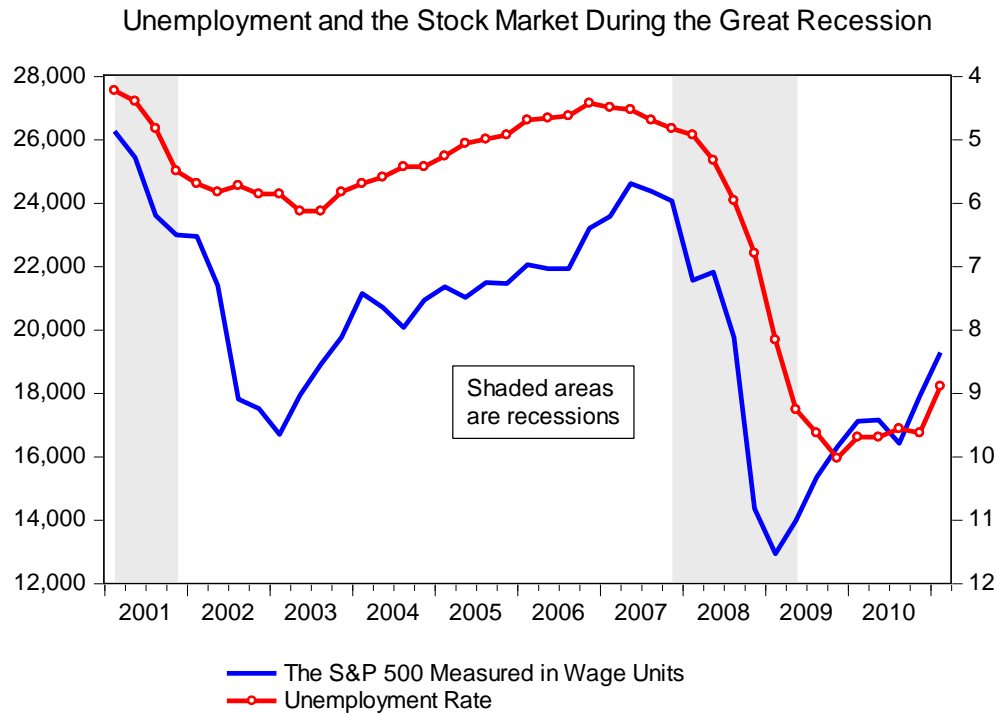


Chart 2: Unemployment and the Stock Market During the Great Recession²

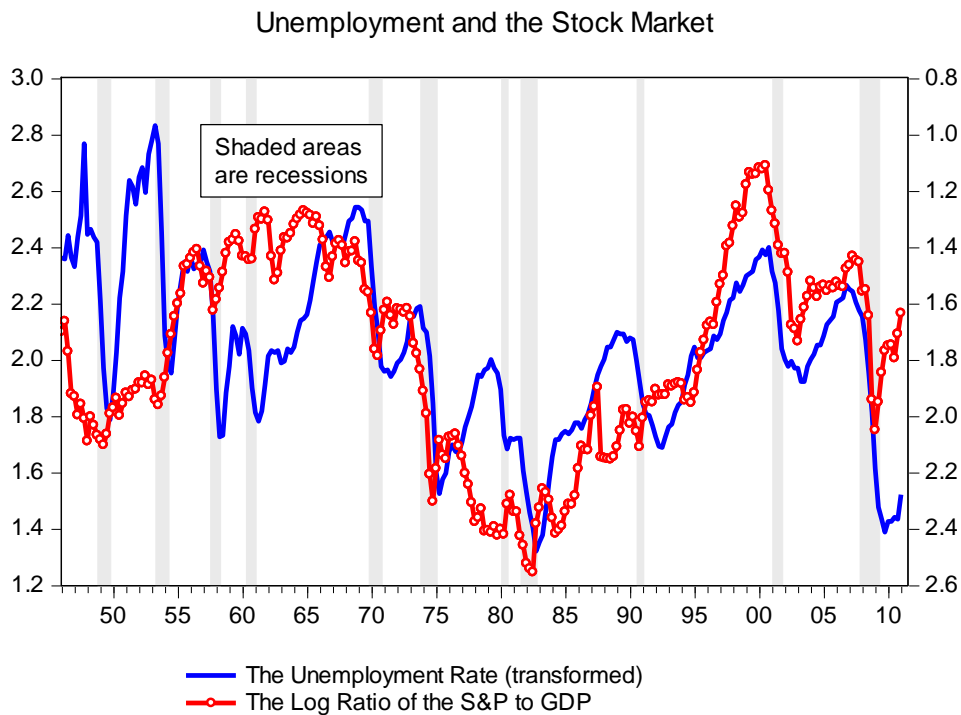


Chart 3:

Chart 3: Unemployment and the Stock Market in Post-WWII Data³

^{2 3} Source: FRED II and author's calculations.

of a causal mechanism between falls in wealth and increases in unemployment is, I think, a relatively easy one to take away from these charts.

One might believe that these two historical periods are special. But that is *not* the case. Chart 3 illustrates data from 1945 up through 2011 showing the connection between unemployment and the stock market. The stock market is measured as the logarithm of a real measure of the S&P 500 index. The transformed unemployment rate is measured as a logistic transformation of the logarithm of the reported unemployment rate. I chose these transformations to ensure that both variables can vary between minus infinity and plus infinity. A careful analysis of the properties of these variables reveals that they are each well modelled individually as random walks.⁴ But a linear combination of the unemployment rate and the stock market is a stationary variable. Technically, we say that they are cointegrated. Further, the cointegrating relationship between unemployment and the stock market has been quite stable over the entire post-war period.

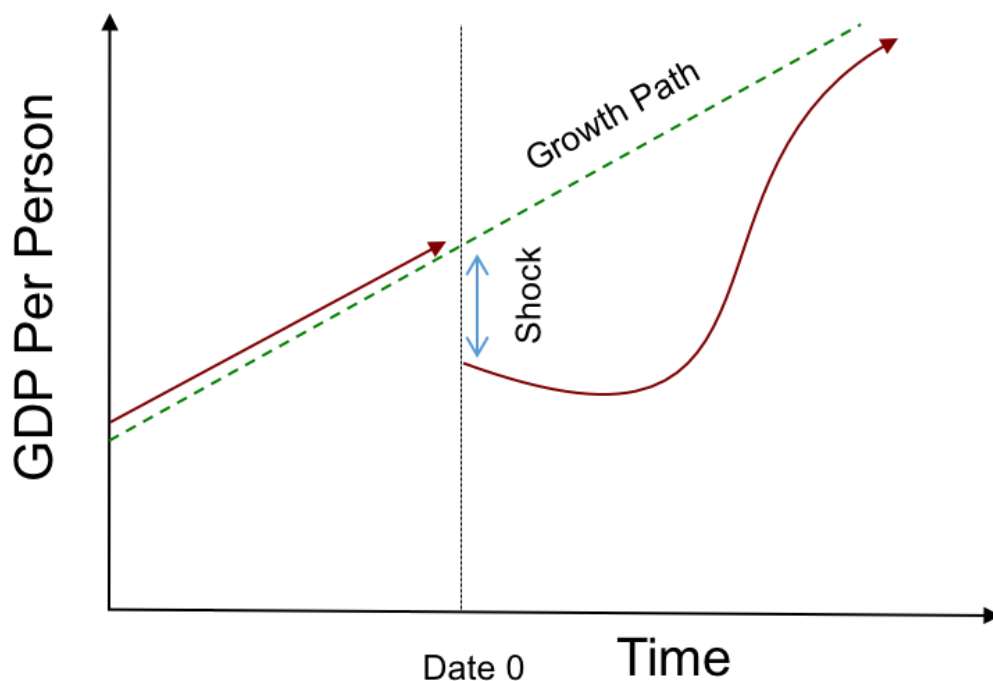


Chart 4: The Rocking Horse Model⁵

In my view, the connection between the stock market and the unemployment rate is causal and it operates through a demand-side mechanism and not a supply-side mechanism.

⁴ More precisely, they each have a non-stationary $I(1)$ component. See Hamilton (1994) for a discussion of this concept and of the related concept of cointegration.

⁵ Source: *Prosperity for All*: Figure 8.3. Used by permission.

Next I'm going to show you some toy models to help you think about what that statement entails. The first model, I call this a rocking horse model, is the kind that characterizes *almost all* of modern DSG theory. The rocking horse model is illustrated in Chart 4. This model has the property that, after a shock, the economy returns back to its growth path. The dynamics of a rocking horse model is well described by a vector autoregression in which there is a stable point or a stable growth path to which the economy returns.

Chart 5 illustrates an alternative theory that I call the windy boat model. In the windy boat model, the economy is like a boat on the ocean with a broken rudder. The dynamics of the windy boat model can be described by a process that physicists call *hysteresis*. If there is a shock to the economy, instead of returning back to the same growth path, the economy returns back to a different growth path as in the illustration in Chart 5.

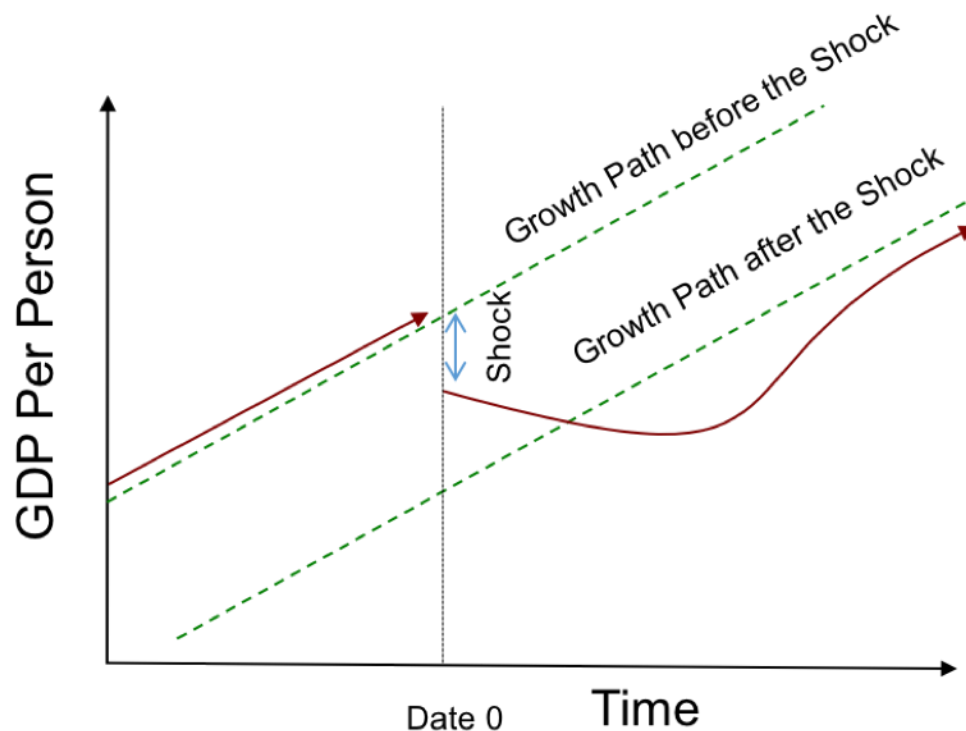


Chart 5: The Windy Boat Model⁶

The interesting question is: Is the economy more like the rocking horse or is it more like the windy boat? In the windy boat example, instead of there being a point that the economy returns to there is a connected set of points. There are many steady-state equilibrium unemployment rates, any one of which could act as a rest point for the system.

⁶ Source: Prosperity for All. Figure 8.3. Used by permission.

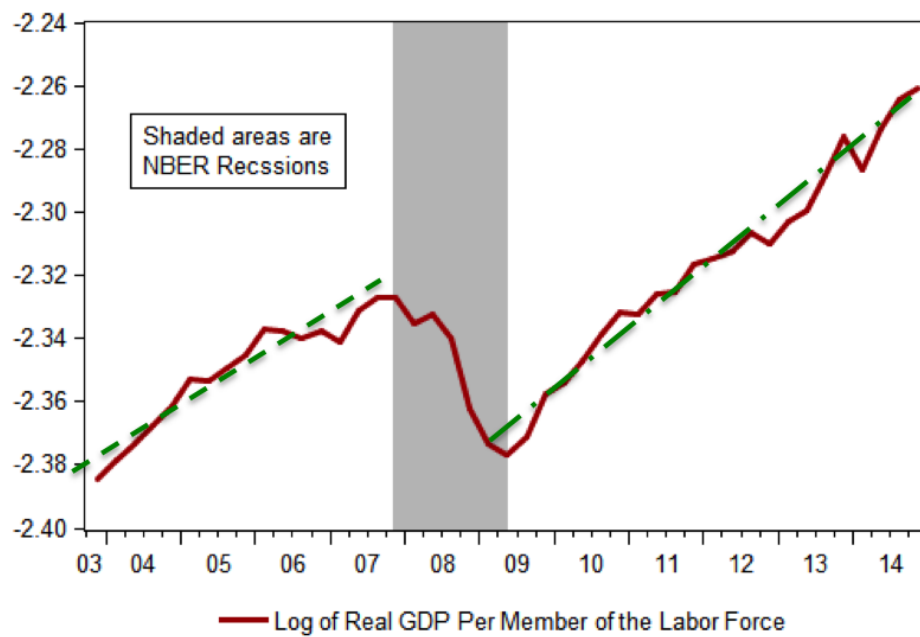
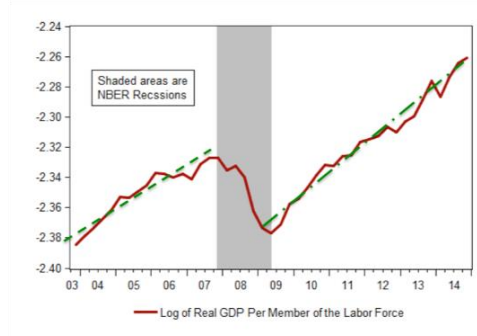
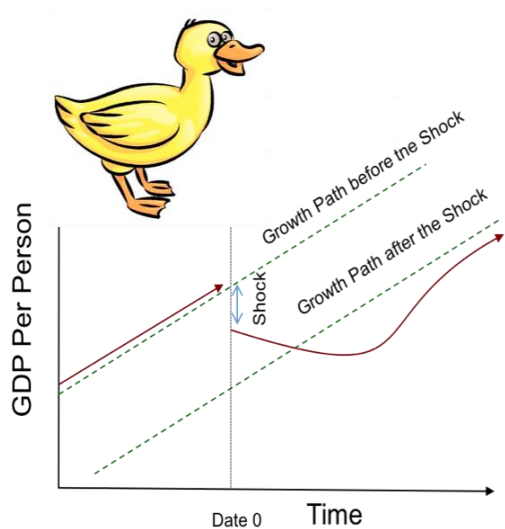


Chart 6: U.S. Data Since the Great Recession⁷

If it Looks Like Duck....



...swims like a duck and quacks like a duck...

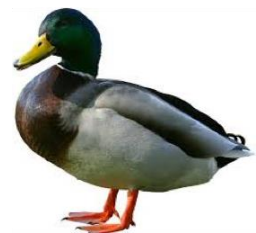


Chart 7: Comparing the models with data

⁷ Source. *Prosperity for All*. Figure 8.5. Used by permission.

Chart 6 illustrates what happened in the U.S. data after the Great Recession. This picture, in my view, is a lot closer to my windy boat model than to the rocking horse model. There is a saying that I learned in the United States which I have illustrated in Chart 7. If it looks like a duck, swims like a duck and quacks like a duck; it probably is a duck.

The conclusions I take away from this discussion are twofold. First, there is a great deal wrong with the DSGE models we've been using for the past fifty years and, second, we can learn from the information revolution. But the kinds of things we need to learn from the information revolution are likely to have more profound effects than the simple tweaks that too many New Keynesian economists continue to make to New Keynesian DSGE models. The economy is not a stable self-correcting system: It is characterized by instability and hysteresis. These conclusions lead to a key question and this is where John's work on the dynamics of unemployment and inflation come in.

I personally am quite critical of Phillips curves. I have long argued that they haven't existed in data since Phillips wrote the first paper on the topic in 1958. On the other side of this argument, there are people like Bob Gordon (2013) who has argued that the Phillips curve is alive and well and that it is possible to estimate a stable Phillips curve in post-WWII data. But the way that Bob does this is by assuming that the natural rate of unemployment itself is a random walk. Like the hysteresis view, this assumption also implies that the unemployment rate has a non-stationary component. But when non-stationarity comes from supply-side shifts in the supply of labour, there is not much that policy can, or should, do to correct the situation. I'm not sure where John stands on this issue; but in my view it is one of the most important issues for the future of macroeconomics.

The question we need to ask ourselves is this: Is the non-stationary component of the unemployment rate due to a non-stationary component of the structure of labour markets that causes changes in the natural rate of unemployment to move in unpredictable ways? Or, is it due to demand side variables that we can potentially influence through monetary policy? These two explanations have very different consequences for the way economists and policy makers should think about operationalizing not just monetary policy, but also fiscal policy going forwards.

To conclude. I enjoyed reading John's paper enormously and, in this discussion, I've provided some complementary ideas that I have elaborated on in more depth in my recent book, *Prosperity for All: How to Prevent Financial Crises*.

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